

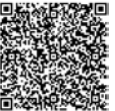
Nickel Metal Hydride Battery



Feb, 2020

Panasonic Corporation

Please
access our
website.



Features



1. Wide range of operating temperature

Enables to use under severe condition from low to high temperature

2. Eco-friendly

High recyclable, enables to be repeatedly charged and discharged

3. Suitable for replacing Ni-Cd batteries

Achieves longer lifetime than Ni-Cd batteries

Market Sectors

✓ Nickel Metal Hydride Batteries are mainly used in automotive industry, Infrastructure industry.

Automotive



Automotive electric component



Drive recorder



Infrastructure



Solar street light



Elevator



Ocean buoy



Emergency / Guidance light



Others



Medical device



Electric power tool / Home Appliance

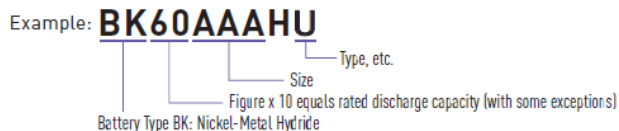


Lineup

		High-Current Discharge	Rapid Charging*1	Ultra-Rapid Charging*2	High Temp. (60 °C) Recharging*3	High Temp. (75 °C) Recharging*3	Long Life*4
Nickel-Metal Hydride Batteries	U Infrastructure Backup (Long-life Type)		●		●	●	●
	H Infrastructure Backup (General Type)		●		●		●
	PH Infrastructure Backup (High-rate Discharge Type)	●	●		●		●
	V Large-type for Infrastructure Applications	●			●		●
	W Automotive Backup		●		●		●
	B Button Top		●				
	N Standard		●				
	P High-rate Discharge	●	●	●			

*1 1-2 hours (dT/dt value)
 *2 Within 1 hour (Step control charge system)
 Note: for charge specification, please contact Panasonic.
 *3 Standard model: 0-40°C
 *4 Approx. 2,000 cycle (under Panasonic recommended charge/discharge condition)

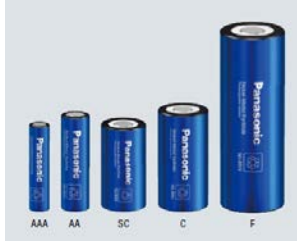
■ Example
 Nickel-Metal
 Hydride Battery
 Model-Number
 Composition



- Size
- AAA
 - AA
 - A
 - SC
 - C
 - F



U Infrastructure Backup(Long-life Type)



Features

- Long 8-10 operational life ※2
- Excellent recharging performance in high temperature (up to 75 °C)
- High rate discharge (3-5It discharge/20° C)
* BK60AAAHU: Max. discharge current is 1It
- Suitable for replacing Ni-Cd batteries

Applications

Emergency lights, guidance lights, LED lights, wireless base stations, servers, elevators, ATM, POS, vending machines, medical devices, etc

Size	Model No.	Nominal voltage (V)	Discharge capacity (mAh)*1		Dimensions with tube (mm)		Mass (g)	Operating temperature range		
			Rated (min.)	Average (typ.)	Diameter	Height		Charge	Discharge	
NEW	AAA	BK60AAAHU	1.2	500	550	10.5 +0/-0.7	44.5 +0/-1.5	12	-10 °C to 75 °C	-20 °C to 75 °C
	AA	BK120AAAHU		1,200	1,290	14.5 +0/-0.7	50.5 +0/-1.5	24	-20 °C to 75 °C	
NEW	SC	BK220SCHU	2,200	2,300	23.0 +0/-1.0	43.0 +0/-1.5	52			
	C	BK310CHU	3,100	3,300	25.8 +0/-1.0	50.0 +0/-2.0	78			
	F	BK1100FHU	11,000	12,000	33.0 +0/-1.0	91.0 +0/-2.5	245			-20 °C to 85 °C**

*1. 0.2It discharge capacity after charging at 0.1It for 16 hours

*2. Lifespan compared to Panasonic standard type battery life cycle(3-5 years) charged using intermittent charging method

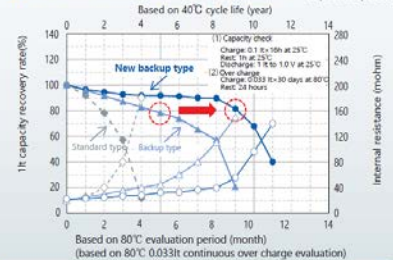
*3. Please consult Panasonic when anticipating usage in operating temperature from 75 to 85°C
Note: 1It(A) = rated capacity (Ah)/(hr.)

Long life (Trickle charging method)

Trickle charging is completely compatible with Ni-Cd battery

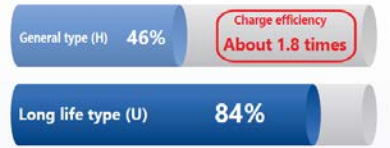


■ Example of estimated life by accelerated life evaluation

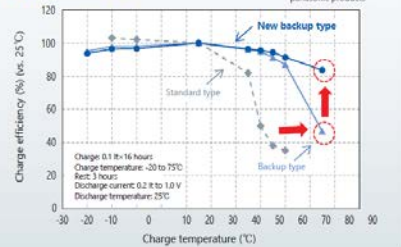


Deliver excellent charge characteristics at high temperature (75°C)

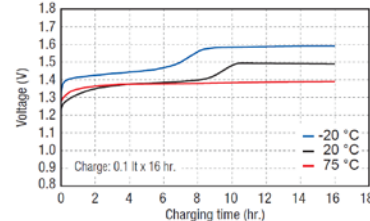
Operating temperature is updated from 60 to 75°C



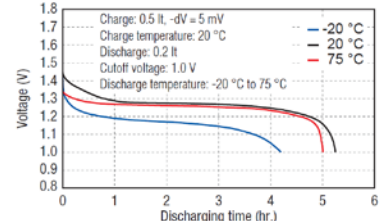
■ Charge characteristics



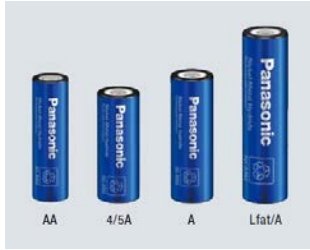
Charge characteristics



Discharge characteristics



H Infrastructure Backup(Standard type)



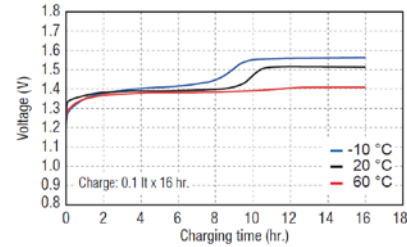
Features

- Long 4-6 years operational life ※2
- Enables to use in a wide range of temperature(-10 to 60° C)
- Suitable for replacing Ni-Cd batteries

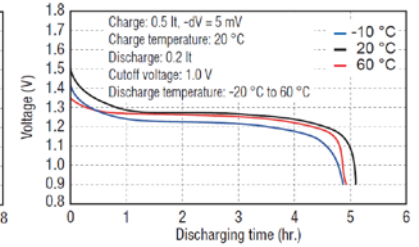
Applications

Emergency lights, guidance lights, LED lights, wireless based stations, servers, elevators, ATM, POS, vending machines, medical devices, etc

■ Charge characteristics



■ Discharge characteristics



Size	Model No.	Nominal voltage (V)	Discharge capacity (mAh)*1		Dimensions with tube (mm)		Mass (g)	Operating temperature range	
			Rated (min.)	Average (typ.)	Diameter	Height		Charge	Discharge
AA	BK70AAH	1.2	700	750	14.5 +0/-0.7	49.0 +0/-1.5	18	-10 °C to 60 °C	-10 °C to 60 °C
AA	BK110AAH		1,100	1,180	14.5 +0/-0.7	50.5 +0/-1.5	24		
AA	BK150AAH		1,450	1,530			25		
4/5A	BK160AH		1,600	1,720	17.0 +0/-0.7	43.0 +0/-1.5	29		
A	BK210AH		1,900	2,050	17.0 +0/-0.7	50.0 +0/-2.0	35		
Lfat/A	BK370AH		3,500	3,700	18.2 +0/-0.7	67.5 +0/-1.5	60		

*1. 0.2It discharge capacity after charging at 0.1It for 16 hours

*2. Lifespan compared to Panasonic standard type battery life cycle(3-5 years) charged using intermittent charging method

Note: 1It(A) = rated capacity (Ah)/(hr.)

PH Infrastructure Backup(High rate Discharge Type)



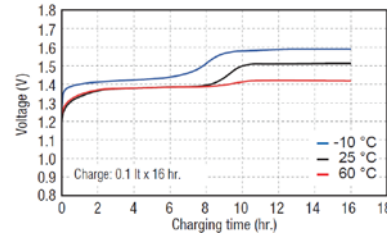
Features

- Long 4-6 years operational life ※2
- High rate discharge (5lt discharge/20 °C)
- Suitable for replacing Ni-Cd batteries

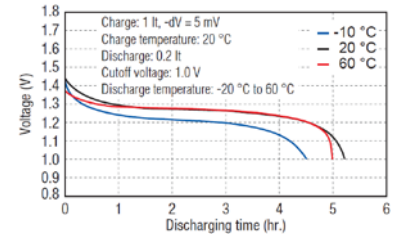
Applications

Elevators, AGV, UPS, ATM, POS, vending machines, medical devices, etc

■ Charge characteristics



■ Discharge characteristics



Size	Model No.	Nominal voltage (V)	Discharge capacity (mAh)*1		Dimensions with tube (mm)		Mass (g)	Operating temperature range	
			Rated (min.)	Average (typ.)	Diameter	Height		Charge	Discharge
SC	BK250SCH	1.2	2,500	2,650	23.0 +0/-1.0	43.0 +0/-1.5	53	-10 °C to 60 °C	-10 °C to 60 °C
Lfat/A	BK330APH		3,200	3,300	18.2 +0/-0.7	67.5 +0/-1.5			

*1. 0.2lt discharge capacity after charging at 0.1lt for 16 hours

*2. Lifespan compared to Panasonic standard type battery life cycle(3-5 years) charged using intermittent charging method

Note: 1lt(A) = rated capacity (Ah)/(hr.)



Large-type for Infrastructure Applications



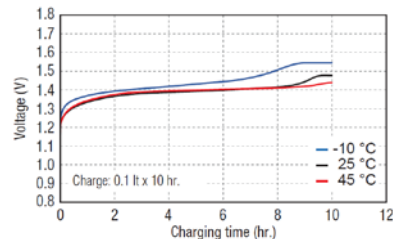
Features

- Designed for extra-large power capacity
- Highly efficient power supply even in low temperature
- 5-stage LED indicates remaining battery life(BK-10V10T)

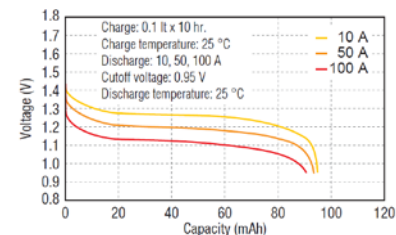
Applications

AGV, rail vehicle, wireless base stations, UPS, etc

■ Charge characteristics (e.g. BK-10V1S)



■ Discharge characteristics (e.g. BK-10T1S)



Size	Model No.	Nominal voltage (V)	Discharge capacity (mAh)*1		Dimensions with stud bolts (mm)		Mass (g)	Operating temperature range		
			Rated (min.)	Average (typ.)	Diameter	Height		Charge	Discharge	
V	BK-10V1S	1.2	90,000	95,000	62.6 +1.0/-1.0	188.7 +1.0/-1.0	1,700	-20 °C to 60 °C	-20 °C to 60 °C	
Size	Model No.	Nominal voltage (V)	Rated (min.)	Maximum continuous discharge current (A)	Dimensions (mm)			Mass (kg)	Operating temperature range	
					Width	Depth	Height		Charge	Discharge
-	BK-10V10T	12	90,000	100	428	159	270	23	-20 °C to 60 °C	-20 °C to 60 °C

*1. 0.2It discharge capacity after charging at 0.1It for 16 hours
Note: 1It(A) = rated capacity (Ah)/(hr.)

W Automotive Backup



Features

- Enables to operate in a wide range of temperature(-30 to 85 °C)
- Installable in severe conditions because electrolyte solution is aqueous
- Enables to control charge, and easy to do health check

Applications

TCU, eCall, drive recorder, anti-theft security systems, etc

Size	Model No.	Nominal voltage (V)	Discharge capacity (mAh)*1		Dimensions with tube (mm)		Mass (g)	Operating temperature range	
			Rated (min.)	Average (typ.)	Diameter	Height		Charge	Discharge
AAA	BK60AAAW	1.2	500	550	10.5 +0/-0.7	44.5 +0/-1.5	12	-20 °C to 45 °C*2	-30 °C to 85 °C*4
AA	BK120AAW							1,200	1,280

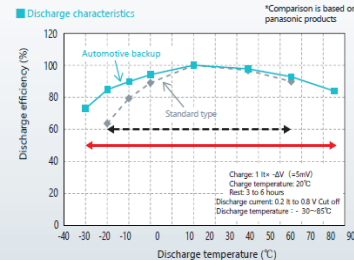
- *1. 0.2It discharge capacity after charging at 0.1It for 16 hours
 - *2. Temperature range where 0.5 to 1It rapid charge is enabled
 - *3. Temperature range where 0.1It rapid charge is enabled
 - *4. Temperature range where 0.2It rapid charge is enabled
 - *5. Temperature range where 1It rapid charge is enabled
- Note: 1It(A) = rated capacity (Ah)/(hr.)

Enables to use in a wide range of temperature (-30 to 85°C)

[Standard type(N)] -20 to 65°C

0.2It
Discharge

[Automotive backup(W)] -30 to 85°C

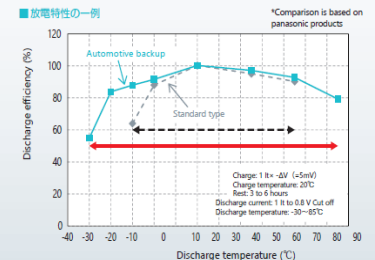


Efficient discharge in low temperature (-30°C)

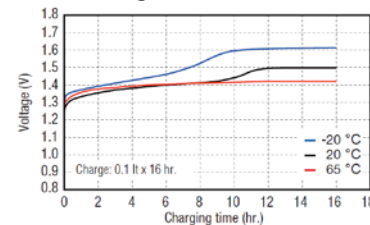
[Standard type(N)] -10 to 65°C

1It
Discharge

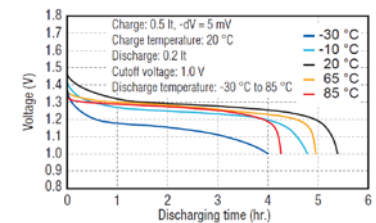
[Automotive backup(W)] -30 to 85°C



■ Charge characteristics



■ Discharge characteristics



B Button Top



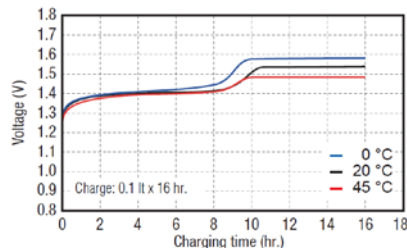
Features

- Long charge/discharge cycle life about 1800 times**2
- Low self discharge and long storage life
- Excellent temperature resistance especially in low temperature

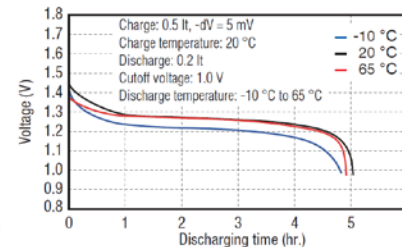
Applications

Electric toothbrushes, electric shavers, remote controllers, etc

■ Charge characteristics



■ Discharge characteristics



Size	Model No.	Nominal voltage (V)	Discharge capacity (mAh)**1		Dimensions with tube (mm)		Mass (g)	Operating temperature range	
			Rated (min.)	Average (typ.)	Diameter	Height		Charge	Discharge
AAA*3	BK80AAAB	1.2	750	780	10.5 +0/-0.7	44.5 +0/-1.0	12	0 °C to 45 °C	-10 °C to 65 °C
AA*4	BK200AAB		1,900	2,000	14.5 +0/-0.7	50.5 +0/-1.0			

*1. 0.2It discharge capacity after charging at 0.1It for 16 hours

*2. Measured under condition complying with JIS C8708 2013(7.5.1.1). Actual capacity depends on usage condition.

*3. AAA size compatible

*4. AA size compatible

Note: 1It(A) = rated capacity (Ah)/(hr.)

N Standard



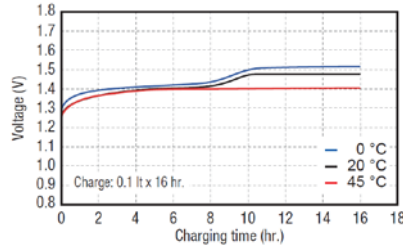
Features

- High safety and reliability
- Wide product range

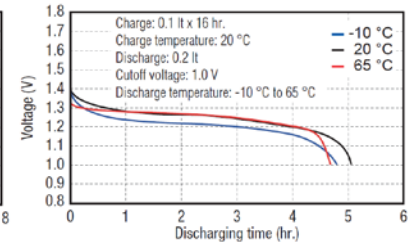
Applications

Radios, intercommunication systems, cordless phones, medical devices, etc

■ Charge characteristics



■ Discharge characteristics



Size	Model No.	Nominal voltage (V)	Discharge capacity (mAh)*1		Dimensions with tube (mm)		Mass (g)	Operating temperature range				
			Rated (min.)	Average (typ.)	Diameter	Height		Charge	Discharge			
AAA	BK70AAAJ	1.2	700	730	10.5 +0/-0.7	44.5 +0/-1.5	12	0 °C to 45 °C	-10 °C to 65 °C			
	BK70AA			780		49.0 +0/-1.5				18		
AA	BK110AAO		1,100	1,180	14.5 +0/-0.7	50.5 +0/-1.5				24		
	BK150AA		1,500	1,580						25		
	BK200AAP		1,900	2,000						28		
4/5A	BK200A		2,000	2,040	17.0 +0/-0.7	50.0 +0/-2.0				32		
A	BK210A		2,100	2,200						36		
	BK250A		2,450	2,600						37		
LA	BK380A		3,700	3,800		67.0 +0/-2.0				53		
Lfat/A	BK450A		4,200	4,500	18.2 +0/-0.7	67.5 +0/-1.5				61		

*1. 0.2It discharge capacity after charging at 0.1It for 16 hours
Note: 1It(A) = rated capacity (Ah)/(hr.)



P High-rate Discharge



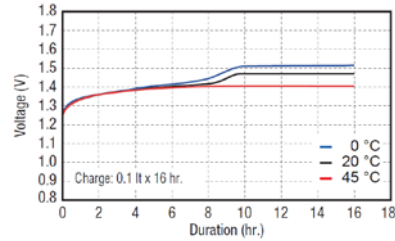
Features

- Excellent high current discharge characteristics
- Rapid charging capacity

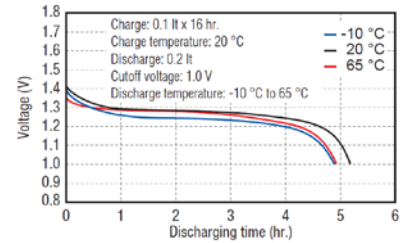
Applications

Power tools, cordless cleaners, electric toys (radio controlled cars), etc

■ Charge characteristics



■ Discharge characteristics



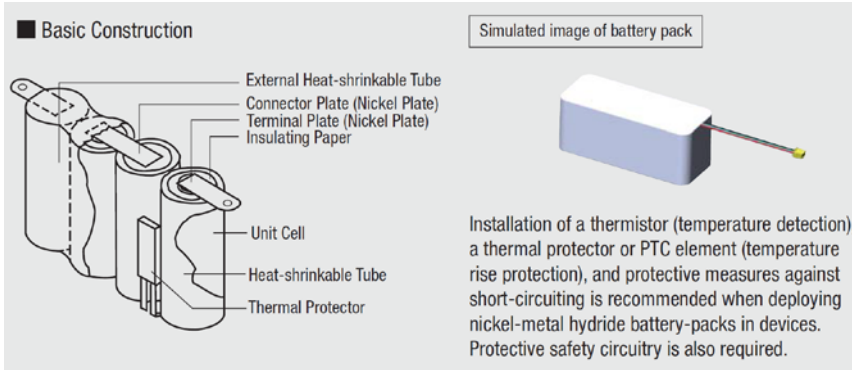
Size	Model No.	Nominal voltage (V)	Discharge capacity (mAh)*1		Dimensions with tube (mm)		Mass (g)	Operating temperature range	
			Rated (min.)	Average (typ.)	Diameter	Height		Charge	Discharge
SC	BK260SCP	1.2	2,450	2,700	23.0 +0/-1.0	43.0 +0/-1.5	55	0 °C to 45 °C	-10 °C to 65 °C
	BK300SCP		2,800	3,050					

*1. 0.2It discharge capacity after charging at 0.1It for 16 hours

Note: 1It(A) = rated capacity (Ah)/(hr.)

Please use appropriate voltage and temperature management to control battery temperature near the end of rapid charging

Battery Pack



- ✓ When battery packs are installed, the battery type, number of cells, pack shape, and constituent parts are determined by the application. Considerations include voltage and current; charging specifications; available space; and usage conditions. We design and manufacture to the most common industrial applications to best meet customer needs while maintaining safety, quality, and reliability as our central focus.



- ✓ Compared to the consumer market, a higher standard of quality and reliability is expected in industrial battery applications, particularly where batteries are intended for vehicles where harsh vibration and huge temperature fluctuations are commonplace. To ensure quality and reliability in this environment, Panasonic selects components for battery packs with utmost care and applies stringent controls for structural assembly and battery production. Suitability for automotive use is evidenced by PPAP (Production Part Approval Process) certification and IATF16949 compliance.

Please feel free to ask a Panasonic sales person.

Panasonic Nickel Metal Hydride HP

<https://eu.industrial.panasonic.com/products/batteries-energy-products/secondary-batteries-rechargeable-batteries/nickel-metal-hydride>